CLAIMS

We Claim:

1. An apparatus, comprising;

an optically transparent member, the optically transparent member having:

an input configured to receive light; and

one or more facets formed in the optically transparent member, the one or more facets being configured to reflect light received at the input of the optically transparent member, the reflected light creating a lamina of light adjacent the optically transparent member.

2. The apparatus of claim 1, wherein the one or more facets have an optically reflective surface.

3. The apparatus of claim 1, wherein the facets act as Total Internal Reflection (TIR) mirrors.

4. The apparatus of claim 1, wherein the optically transparent member is made of a material having an index of refraction greater than the index of refraction of the free space surrounding the optically transparent member when the optically transparent member is in use.

5. The apparatus of claim 1, wherein the optically transparent member has side walls, and the one or more facets being recessed within the side walls.

6. The apparatus of claim 1, wherein the optically transparent member has a first side and a second side, the first side and the second side being joined at a second predetermined angle with respect to one another.

7. The apparatus of claim 1, wherein the first side and the second side are configured at right angles with respect to one another.

8. The apparatus of claim 1, wherein the optically transparent member has a first side and a second side joined at an angle, the first side being configured to transmit light received at the input to the second side by way of a Total Internal Reflection mirror formed at the angle.

9. The apparatus of claim 1, further comprising a light source configured to generate the light received at the input of the optically transparent member.

11. The apparatus of claim 9, wherein the light source comprises one of the following types of light sources: a laser, LED, or a lamp.

12. The apparatus of claim 9, further comprising a collimating element to collimate the light source before the light enters the input of the optically transparent member.

13. The apparatus of claim 9, further comprising a diffusing element to diffuse the light from the light source before the light enters the input of the optically transparent member.

14. The apparatus of claim 13, wherein the diffusing element diffuses the light in the range of 10 degrees or less.

15. The apparatus of claim 1, further comprising a touch screen display, the display being positioned in the free space next to the lamina of light adjacent the optically transparent member.

16. The apparatus of claim 15, further comprising an optical position detection device configured to detect the position of an interrupt in the lamina when a data entry is made to the touch screen display.

17. The apparatus of claim 15, wherein the optically transparent member has a first side configured to generate the lamina of light in a first direction defined by a first axis and a second side configured to generate the lamina of light in a second direction defined by a second axis.

18. The apparatus of claim 16, further comprising a processor, coupled to the optical position detection device, and configured to determine the data entry made to the touch screen display based on the location of the interrupt.

19. The apparatus of claim 1, wherein the one or more facets are configured within the optically transparent member at a predetermined angle with respect to a side wall of the optically transparent member.

20. The apparatus of claim 19, wherein the predetermined angle ranges from zero to a any angle within the TIR of the material used to make the optically transparent member.

21. The apparatus of claim 1, wherein the one or more facets are configured within to have a tilt with respect to the optically transparent member, the tilt being selected to steer the direction of the light reflected from the one or more facets respectively.

22. The apparatus of claim 2, wherein the reflective surfaces of the one or more facets each have a different depth.

23. The apparatus of claim 2, wherein the one or more facets have a surface that extends from the optically reflective surface to a light emitting surface on the optically transparent member, the height of the surface varying to reduce the amount of light blocked by first facet and received by a subsequent facet.

24. The apparatus of claim 23, wherein the height of the surface is lower in the vicinity of the optically reflective surface relative to the height of the surface near the light emitting surface.

25. The apparatus of claim 1, wherein the optically transparent member is made from an molded piece of glass or plastic.

26. The apparatus of claim 1, wherein the optically transparent member is made from a cut piece of glass or plastic.

27. The apparatus of claim 1, wherein the optically transparent member is made from a machine cut of glass or plastic.

28. The apparatus of claim 2, wherein the optically reflective surface of the one or more facets has one of the following shapes: flat; converging, or diverging.

29. The apparatus of claim 1, further comprising a collimating element integral with the input of the optically transparent member.

30. The apparatus of claim 1, wherein the optically transparent member further comprises a beam splitter configured to split the light received at the input into two directions.

31. The apparatus of claim 1, wherein the optically transparent member has a first side running in the direction of a first axis and a second side running in the direction of a second axis.

32. The apparatus of claim 1, further comprising:

a touch display screen, the display screen positioned adjacent the lamina of light created by the optically transparent member;

a receiving array configured to detect an interrupt in the lamina when a data entry is being made in to the touch display screen; and

a processor, coupled to the receiving array, and configured to determine the data entry based on the location of the interrupt in the lamina.

33. The apparatus of claim 32, wherein the receiving array is further configured to detect the coordinates of the interrupt in the lamina along a first axis and a second axis.

34. The apparatus of claim 2, wherein the optically reflective surface of the one or more facets are micro-mirrors.

35. The apparatus of claim 34, wherein the micro-mirrors are internal to the optically transparent member.

36. The apparatus of claim 34, wherein the micro-mirrors are positioned on an external surface of the optically transparent member.

37. The apparatus of claim 34, wherein the micro-mirrors have one of the following shapes: flat, convergent, or divergent.

38. The apparatus of claim 1, further comprising one or more refractive elements positioned on an external light emitting surface of the optically transparent member.

39. The apparatus of claim 38, wherein the refractive elements have one of the following shapes: flat, convergent, or divergent.

40. The apparatus of claim 38, wherein the one or more refractive elements correspond to the one or more facets respectively.